defibrillator is present, takes precedence over intubation, intravenous line placement and even CPR. The use of sodium bicarbonate is deemphasized and is merely considered rather than recommended well into the resuscitation. For asystole and electromechanical dissociation, the use of calcium has been eliminated.

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Expanding the Use of Automatic External Defibrillators to Home and Community

THE SINGLE most effective intervention in cardiac arrest occurring outside the hospital is early external defibrillation. The problem is that ventricular fibrillation is a very transient rhythm, lasting only a few minutes before it decays to asystole, from which virtually no one can be resuscitated. A major thrust in emergency medicine has been to develop ways to get a defibrillator to a patient in cardiac arrest as quickly as possible. Paramedics in mobile coronary care units were, in their original conception, "invented" so that they could carry defibrillators to such patients. Next, emergency medical technicians (EMTs), less well trained than paramedics but more than ten times as plentiful, were trained to identify ventricular fibrillation and to deliver a defibrillatory shock when they discovered a patient in that rhythm. The problem still remains, however, that emergency personnel can take a long time to get a defibrillator to a patient's side.

The rationale behind early defibrillation strongly suggests that the immediate witnesses of an arrest, bystanders, family members and colleagues at work should also be given defibrillators. Unfortunately, interpreting cardiac rhythms and operating a sophisticated medical device are beyond the ability of most laypersons and even some less-experienced emergency personnel.

Since the late 1970s several companies have worked to develop portable battery-powered defibrillators that could automatically analyze a patient's cardiac rhythm for the presence of ventricular fibrillation. If fibrillation occurs, the devices, called automatic external defibrillators, charge their capacitors and deliver an electrical countershock.

At this time, these defibrillators are being evaluated in several settings. Researchers have studied their use in the homes of patients who have survived either a cardiac arrest or a myocardial infarction. Their work has confirmed that family members of a high-risk patient can be successfully trained to operate an automatic external defibrillator, that they can retain this knowledge over long periods of time and that they will successfully use the device when an actual cardiac arrest occurs.

Fully trained paramedics can diagnose dysrhythmias, insert intravenous lines, administer medication and carry out defibrillation. While lesser-trained EMTs generally lack these skills, they are much more numerous than paramedics and can usually reach a patient more rapidly. The use of automatic external defibrillators by EMTs may partially compensate for their lesser amount of training because rhythm recognition is done by the device, rather than by emergency personnel. Two large controlled trials have confirmed the value of their use by EMTs.

Placing automatic external defibrillators in public settings is another strategy to achieve rapid defibrillation after a cardiac arrest. Researchers are currently conducting evaluations of such placement in senior centers, community health clubs, high-rise office buildings and large corporate settings.

Methods to deal with medical emergencies in the air have remained controversial and hotly debated. One major airline has embarked on a two-year evaluation of the use of automatic defibrillators by trained cabin-crew members in wide-body aircraft that fly international routes.

During the next decade, automatic defibrillators will become smaller, less expensive, safer and more accurate. They are clearly a device of the future.

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Advances in Radiologic Evaluation of Acute Spinal Cord Compression

ACUTE SPINAL CORD compression in cancer patients is a true oncologic emergency. Without prompt intervention, potentially reversible neurologic damage will become permanent. Although direct parenchymal metastatic invasion of the spinal cord is rare, most cancer patients with cord compression present with spinal epidural metastases from the direct spread of vertebral or paravertebral lesions.

While neurologic examination and plain radiographs help to localize the level of the lesion, myelography, using either iophendylate (oil-based), metrizamide (water-soluble) or both as contrast, has been the standard radiologic examination. By using sagittal projection, several levels of obstruction can be visualized simultaneously and spot radiography limits motion artifact. The procedure is invasive, however, often requiring two punctures above and below the lesion to define the extent of obstruction. As only the outline of the soft tissue is visualized, the actual extent of a paravertebral lesion cannot be seen.

The development of high-resolution computed tomography (CT) allows for greater distinction between bone and soft tissue. The transverse view of the spine provides visualization of the perispinal area, allowing a view not only of impingement of the cord but also the extent of epidural metastases. The procedure is noninvasive and requires no contrast material, but within the confines of the spinal canal there is poor resolution between the cord and the subarachnoid space.

A solution to this problem is the use of water-soluble metrizamide contrast with computer-assisted myelography. This improves differentiation between the soft tissues, and transverse views better show the extent of cord compression than does myelography. As smaller amounts of metrizamide